AMENDMENTS TO THE SPECIFICATION:

Page 1, ***further identified as Amended Sheet,*** please add the following new paragraphs before paragraph [0001]:

[0000.2] CROSS-REFERENCE TO RELATED APPLICATIONS

[0000.4] This application is a 35 USC 371 application of PCT/EP 02/13700 filed on December 4, 2002.

[0000.6] BACKGROUND OF THE INVENTION

[0000.8] Field of the Invention

Please replace paragraph [0004] with the following amended paragraph:

[0004] From the prior art, it is known to use communication systems of the type defined ~~**at the outset**~~ above in motor vehicles or other means of transportation (such as aircraft, trains, and ships) for exchanging data between control units. The control units serve to control or regulate certain functions of the means of transportation, such as drive functions (for instance, the driving engine and transmission), safety functions (such as anti-lock brake system or ABS, traction control or ASR, and electronic stability program or ESP) or comfort functions (such as air-conditioning of the interior).

Page 2, ***further identified as Amended Sheet,*** please replace paragraph [0005] with the following amended paragraph:

[0005] In the known communication systems, the data exchange between the control units essentially takes place in serial form over the so-called bus systems. For the data traffic to be reliable and regulated, an agreement about the way in which data will be transmitted, or so-called protocol, is necessary. FlexRay is one

such protocol, which makes it possible to transmit serial data with time control over a bus system. The data are packed into a message in a data frame which additionally includes data for controlling and securing the data traffic. These messages are transmitted cyclically in a fixedly predetermined order, or so-called timeslots.

Please replace paragraph [0007] with the following amended paragraph:

[0007] In FlexRay, according to the prior art, different messages can be transmitted within one fundamental cycle only at different times. Depending on the number of messages to be transmitted, the length of one fundamental cycle is thus determined. Even if a plurality of low-priority messages need to be transmitted only every n^{th} fundamental cycle, still a waiting time must be reserved at least for each of these messages. Thus, the timeframe includes as many timeslots as there are different messages to be transmitted in any one fundamental cycle. If a message is not transmitted in a certain cycle, the timeslot for this message remains empty in that cycle.

Page 3, ***further identified as Amended Sheet***, please replace paragraph [0008] with the following amended paragraph:

[0008] The shortest repetition time for "fast" messages, that is, messages to be transmitted often, accordingly depends on the fundamental cycle. The longer the fundamental cycle ~~is~~, the more infrequently can "fast" messages be sent. To allow the "fast" messages to be repeated more often despite a relatively long fundamental cycle, it is known to assign the messages a plurality of timeslots within one fundamental cycle. However, this has the disadvantage that a strict periodicity can be attained only with difficulty, if at all, and that in the implementation, the memory

requirement may increase, since a plurality of message objects must be procured for one message.

Page 4, ***further identified as Amended Sheet,*** please replace paragraph [0011] with the following amended paragraph:

[0011] Johansson, L. et al: QRcontrol, a Bit-Oriented Communication Concept for Control Systems, QRtech Publication, January 2, 2001, describes a cycle-based communication system for transmitting useful data between users of the system. The communication system described differs from that described ~~at the outset~~ above, in particular in that the known system uses 1-bit-long timeslots. If a user wishes to send a plurality of bits, it requires a plurality of timeslots for the purpose. Moreover, the known communication system makes completely different timeslot sequences per transmission cycle possible. Thus, the number of booked timeslots per user consequently changes as a function of the current cycle. In this reference, there is accordingly no fixed chronological association between a timeslot and a user. This lack of a fixed chronological association of the timeslots with specific users of the system represents an important distinction from the communication system of the type defined at the outset above.

Please replace paragraph [0012] with the following amended paragraph:

[0012] The object of the present invention, ~~in~~ data transmission via a cyclical time-based communication system, in which messages are transmitted in timeslots of a fixed length in cyclically repeating timeframes, is to assure optimal support by the protocol for various period lengths.

Page 5, ***further identified as Amended Sheet,*** please replace paragraph [0014] with the following amended paragraph:

[0014] ~~**Advantages of the Invention**~~

SUMMARY AND ADVANTAGES OF THE INVENTION

Please replace paragraph [0015] with the following amended paragraph:

[0015] In the timeslot, or each timeslot that is usable in various cycles for transmitting different messages, it is possible, according to the invention, for those messages, that need to be transmitted only every n^{th} fundamental cycle, to be transmitted offset from one another in different cycles. Thus, if in a cycle outside the n^{th} cycle, a particular message need not be transmitted, then in that cycle a different message can be transmitted in the corresponding timeslot; there is no need to reserve a waiting time for the message that is not transmitted during that cycle. Thus, with the present invention, on the one hand the number of timeslots in a timeframe can be reduced, making it possible to achieve a shorter repetition time for "fast" messages. ~~**Moreover**~~ On the other hand, the individual timeslots of the timeframe are more effectively utilized, and as a result a greater effective bandwidth can be achieved. In particular, messages with a short or long repetition time can be better accommodated in the communication system without losing bandwidth. Moreover, the system design becomes more flexible, and fewer timeslots have to be monitored by a communications controller.

Page 6, ***further identified as Amended Sheet,*** please replace paragraph [0017] with the following amended paragraph:

[0017] For sending messages, the users of the communication system observe the data traffic on the data bus, and at regular time intervals ~~they~~ monitor the cycle data. Within a predeterminable timeslot, the users send a message if the current cycle data match a predeterminable value for the cycle data that is stored in a memory of the user.

Please replace paragraph [0018] with the following amended paragraph:

[0018] For receiving messages over the data bus, the users also observe the data traffic on the data bus. The users check the identifier of the messages transmitted over the data bus. If a message has an identifier that corresponds to a predeterminable identifier, then at least the useful data of the transmitted message are loaded into the user and ~~there~~ stored in a memory, for instance, or sent onward. Before the further processing of the useful data, the cycle data are checked. Only in the event that they correspond to a value stored in memory in the user for the cycle data, are the useful data further processed.

Page 9, ***further identified as Amended Sheet,*** please replace paragraph [0027] with the following amended paragraph:

[0027] A user of the communication system accordingly does not - as has previously been usual - check the identifier of a message that makes it possible to conclude what the chronological position of the timeslot in which the message is transmitted is within a timeframe. Instead, the user according to the invention also

checks cycle data, assigned to the messages, from which it can be ~~told~~ determined which cycle the current message was transmitted in.

Page 10, ***further identified as Amended Sheet,*** please replace paragraph [0033] with the following amended paragraph:

[0033] Drawings BRIEF DESCRIPTION OF THE DRAWINGS

Please replace paragraph [0034] with the following amended paragraph:

[0034] Further characteristics, possible applications and advantages of the invention will become apparent from the ensuing description of exemplary embodiments of the invention, taken in conjunction with the drawings, in which: ~~which are shown in the drawing. All the characteristics described or shown form the subject of the invention either alone or in arbitrary combination, regardless of how they are summarized in the claims or the claims dependency and regardless of their wording or illustration in the specification and drawing. Shown are:~~

Page 11, ***further identified as Amended Sheet,*** please replace paragraph [0035] with the following amended paragraph:

[0035] Fig. 1~~,~~ shows a cyclical time-based communication system in a preferred embodiment of the present invention;

Please replace paragraph [0036] with the following amended paragraph:

[0036] Fig. 2~~,~~ shows a timeframe with a plurality of timeslots for transmitting messages in the communication system of Fig. 1;

Please replace paragraph [0037] with the following amended paragraph:

[0037] Fig. 3a~~,~~ shows the structure of a message, transmitted in a timeslot of the timeframe of Fig. 2, in a first embodiment;

Please replace paragraph [0038] with the following amended paragraph:

[0038] Fig. 3b~~,~~ shows the structure of a message, transmitted in a timeslot of the timeframe of Fig. 2, in a second embodiment;

Please replace paragraph [0039] with the following amended paragraph:

[0039] Fig. 4a~~,~~ shows a flow chart of a method according to the invention for sending useful data via the communication system of Fig. 1; and

Please replace paragraph [0040] with the following amended paragraph:

[0040] Fig. 4b~~,~~ shows a flow chart of a method according to the invention for receiving useful data via the communication system of Fig. 1.

Please replace paragraph [0041] with the following amended paragraph:

[0041] ~~**Description of the Exemplary Embodiments**~~

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Page 13, ***further identified as Amended Sheet,*** please replace paragraph [0047] with the following amended paragraph:

[0047] The MUX bit directly adjoins the identifier (ID) of the messages Ni (see Fig. 3a). In the present invention, the MUX bit is therefore used to store data pertaining to the current cycle in the message. With the aid of one MUX bit, two different cycles, and in particular even- and odd- numbered cycles, can be distinguished from one another. If more than one MUX bit is provided, then more than two cycles can also be distinguished from one another. If the MUX bits provided in the message

structure do not suffice to distinguish the desired number of cycles from one another, then, according to the present invention, the distribution of the ID bits and MUX bits is changed such that the desired number of cycles can be distinguished from one another. In the exemplary embodiment of Fig. 2, for instance, in the message structure, at least seven ID bits must be provided for identifying the 128 timeslots in timeframe 4, and at least 10 MUX bits must be provided for distinguishing the 1024 cycles from one another.

Page 14, ***further identified as Amended Sheet,*** please replace paragraph [0050] with the following amended paragraph:

[0050] Thus, the timeslots zs2, zs127 and zs128 are each used to transmit two different messages N2 and N129; N127 and N130; and N128 and N131, respectively. The messages N2 and N129 are transmitted in every other cycle zy, or in other words in every second cycle. For identification of the messages N2 and N129, a distinction between the cycles zy in even-numbered cycles (for N2) and odd-numbered cycles (for N129) with the aid of one MUX bit would suffice ~~(2^1 = 2)~~ ($2^1 = 2$). The messages N127 are transmitted in two out of every three cycles zy, and the message N130 is transmitted in every third cycle zy. For identification of the messages N127 and N130, it is necessary to distinguish among three different cycles zy with the aid of at least two MUX bits ~~(2^2 = 4)~~ ($2^2 = 4$). The messages N128 are transmitted in 1023 of 1024 cycles zy, and the message N131 is transmitted in every 1024^{th} cycle zy. For identification of the messages N128 and N131, a distinction is necessary among 1024 different cycles zy with the aid of at least ten MUX bits ~~(2^10 = 1024)~~ ($2^{10} = 1024$).

Page 18, ***further identified as Amended Sheet,*** please add the following new paragraph after paragraph [0060]:

[0061] The foregoing relates to preferred exemplary embodiments of the invention, it being understood that other variants and embodiments thereof are possible within the spirit and scope of the invention, the latter being defined by the appended claims.